Pro-environmental Behavior and Generalized Trust: A Mediation Analysis

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Introduction

Generalized Trust and Pro-environmental Behaviour

- To motivate the paper, we start by describing welfare implications of climate change
- We then motivate how individuals play a role in addressing the negative externality
- Then, illustrate the mechanism to help curb climate change

Introduction: *Social Inefficiency of Climate Change: Theory*

The Coase Theorem (1960)

- **The Coase Theorem**: Pareto optimality/efficiency is maintainable given that there are **no transaction (negotiation) costs (or they are sufficiently small)** and **property rights are assigned.**
- Climate Change is a negative externality
- Climate change is **global**, **additive**, and **reciprocal**.
- ...making Coasean bargaining unavailable.
- The theorem's conditions are not met. Social inefficiency persists.

Introduction: *Social Inefficiency of Climate Change: Evidence*

2019 Europe Sustainable Report

- 2019 Europe Sustainable Development Report
- 193 U.N. member states
- The SDGs and the Paris Climate Agreement:
  orientation towards climate neutrality (SDG 13)
- No country on track to meet SDGs
- European countries also generate **large,negative spillovers** that impede other countries' ability to achieve the SDGs

Table 1 | SDG Index for the European Union

RANK	COUNTRY	SCORE
1	Denmark	79.8
2	Sweden	79.4
3	Finland	79.1
4	Austria	76.7
5	Germany	75.3
6	France	74.7
7	Netherlands	71.8
8	Czech Republic	71.8

FIGURE: SDG Index for the European Union

Introduction: Social Inefficiency of Climate Change

- Both Theory and Evidence suggest that Climate Change is socially inefficient.
  $\Rightarrow$ there is room for improvement of social welfare by reducing the size of the negative externality
- Pro-environmental Behaviour (PEB) defined by Kollmuss and Agyeman (2002)
- PEB :"behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world"
- should be adopted on the way to sustainability (efficiency)

Social Inefficiency of Climate Change

Motivation (1):

- Human Communities seem to recognize the need to reduce climate change, but...
- Environmental Concern doesn't necessarily translate to pro-environmental behavior:
  - Kollmuss and Agyeman, 2002.
  - Gifford, 2011.
  - Lorenzoni et al., 2007.

What mechanism do we consider?

Introduction

Generalized Trust

- Climate change becomes a problem of cooperative action.
- Trust is an important social capital component that affects a range of social, economic, and political outcomes
  - Arrow, 1972 — Fukuyama, 1995 — Putnam, 1993 — La Porta et al., 1997
- Evidence from: public good games
  - Fischbacher et al., 2001. — Frey and Meier, 2004. — Milinski et al., 2006. — Aitken et al., 2011.
  - Thorough explanation provided by Fehr-Duda and Fehr, 2016.

How do we know people are cooperating? (Sønderskov, 2009)

- Generalized Trust $\longrightarrow$ Belief in Cooperation $\longrightarrow$ Your own cooperation

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Introduction

Hypothesis:

- *Environmentally concerned individuals with greater generalized levels of trust will participate in pro-environmental behavior compared to those with lower levels of generalized trust.*

Introduction

Motivation (2):

- Previous research on the effects of generalized trust on pro-environmental behavior has shown little efforts to mitigate the endogeneity issues
  - Tam and Chan, 2018
  - Only Mechanisms (Marbuah, 2016)
  - Nannestad, 2008

Continuing with:

1. Social Inefficiency of Climate Change: Evidence and Theory
2. **Data**
3. Econometric Framework
4. Empirical Analysis and Results
5. Limitations and Suggestions for Further Research

Data

European Social Survey, Round 8

1. Why ESS?
2. 23 countries - 44000 observations spanning Europe (2016-2017)
3. Rotating section on Climate Change
4. Multi-stage sampling
5. Weights

Main Variables

Dependent Variable

- Pro-environmental behavior — standardized
  - Q1: Personal responsibility to reduce climate change. (0 = *Not at all* to 10 = *A great deal*)
  - Q2: Doing things to reduce energy use. (1 = *Never* to 6 = *Always*).
  - Q3: Likelihood of buying energy efficient appliances. (0 = *Not at all likely* to 10 = *Extremely Likely*)

Variable of Interest

- Generalized Trust
  - Binary. *1* if the environmentally-concerned individual has answered *7*, *8*, *9*, *10* on the Likert scale.

Sub-population: Environmentally-concerned individuals

- *"She/he strongly believes that people should care for nature. Looking after the environment is important to her/him"*

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Map: PEB levels

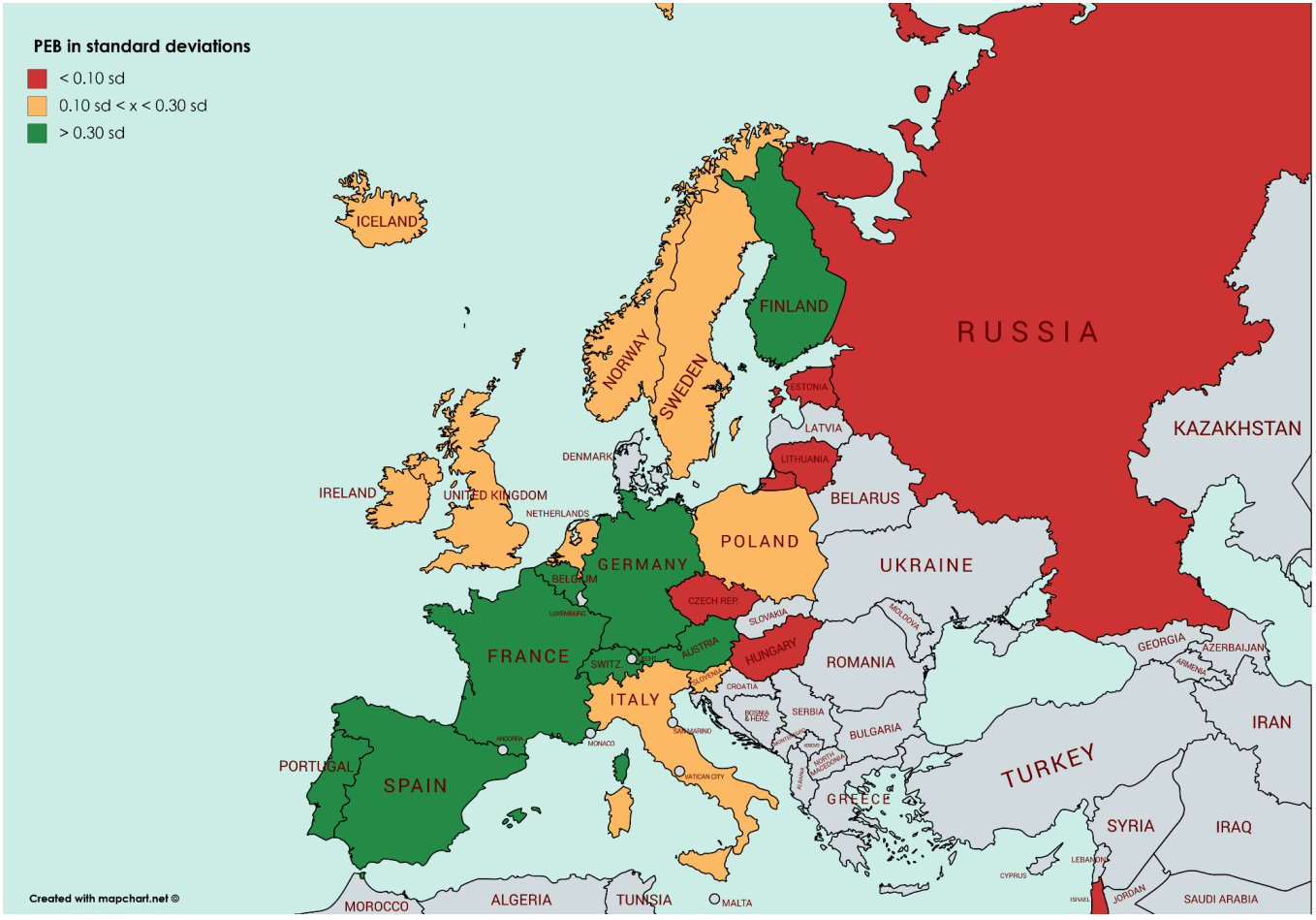

Figure: The figure displays the countries' position on the distribution of PEB.

Map: Trust levels

Figure: The figure displays spectrum of trust levels among the ESS8 countries.

Continuing with:

1. Social Inefficiency of Climate Change: Evidence and Theory
2. Data
3. **Econometric Framework**
4. Empirical Analysis and Results
5. Limitations and Suggestions for Further Research

Econometric Framework

$$PEB_{imhj} = \beta_0 + \beta_1 \times Generalized\ Trust_{imhj} + \beta_j + X_{imhj}\beta + \varepsilon_{imhj} \quad (1)$$

1. PEB_{imhj} = outcome variable for unit i, in PSU m, in stratum h, and country j
2. $GeneralizedTrust_{imhj}$ = indicator for belonging in the upper distribution of the trust scale
3. X_{imhj} = vector of individual characteristics forming the mechanisms
4. β_j = country-fixed effects
5. ε_{imhj} = heteroskedasticity-robust error term

Continuing with:

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4. **Empirical Analysis and Results**
5. Limitations and suggestions for Further Research

Descriptive Statistics

Table 1A. Descriptive Statistics

	N	mean	range
Variables of interest			
Generalized Trust	29698	0.288	0-1
Subpopulations			
Environmental Concern Q1	43628	0.685	0-1
Demographics			
Age	29679	48.572	15-100
Female	29750	0.528	0-1
Categorical: Education Level	28801	2.800	0-5
Deciles: Household Income	24734	5.310	1-10
Political Ideology			
Left to Right Scale	26224	4.901	0-10

	N	mean	range
Democracy			
Satisfaction with Democracy	28875	4.919	0-10
Political Freedom	29287	2.045	0-4
Religion			
Strength of religious affiliation	29506	4.66	0-10
Catholicism	17791	0.544	0-1
Protestantism	17791	0.155	0-1
East Orthodox Church	17791	0.195	0-1
Jew	17791	0.013	0-1
Islam	17791	0.061	0-1
Family			
Married	17791	0.017	0-1
Child at home	29746	0.364	0-1

Notes: All descriptive statistics are subset to **Q1**.

Main Results

Table 2. Pro-Environmental Behavior on Trust

Pro-Environmental Behavior	**% of Standard Deviation**						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Generalized Trust	0.132***	0.127***	0.084***	0.127***	0.113***	0.119***	0.071***
Q1	(0.021)	(0.023)	(0.025)	(0.023)	(0.022)	(0.022)	(0.026)
Country f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Religion			Yes				
Family				Yes			
Democracy					Yes		
Political Ideology						Yes	
All Mechanisms							Yes
chow test p-val	—	0.724	0.027**	0.713	0.247	0.446	0.010**
RESET p-val	0.760						0.272
Mean dep. var.	0.187	0.223	0.231	0.223	0.244	0.269	0.286
Observations	41575	36355	26532	36353	35739	34434	25104
R^2	0.211	0.260	0.283	0.260	0.260	0.253	0.280

Findings

Observed hypothesized effect of generalized trust is robust to these additional channels

- Climate-concerned individuals: $\uparrow$ generalized trust $\longrightarrow \uparrow$ PEB
- estimate mediated by the religion channel
  - remained robust at the 1% level
- Possible Explanations
- We do not establish a causal relationship

To finish:

1. Social Inefficiency of Climate Change: Evidence and Theory
2. Data
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4. Empirical Analysis and Results
5. **Limitations and Suggestions for Further Research**

Limitations

4 main limitations

1. Generalized trust interpretation
2. Weak PEB construct
3. Lack of exogenous variation in trust
4. No country level analysis (main actors in fighting climate change)

Suggestions for future research

4 Suggestions

- Consult different trust measure on *trusting behaviors*
- Construct PEB measure of more items using different dataset (e.g., ISSP, GSS, WVS)
- Seek exogenous variation in trust from natural or political intervention (IV, structural estimation, or bayesian estimation).
- Perform country level analysis using different dataset (e.g., GSS, WVS, Gallop/GPS)

THANK YOU